

**Listing of Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method for scheduling a monitor job for a tool in a semiconductor manufacturing environment, the method comprising:
  - receiving the monitor job;
  - monitoring a status of the tool to determine when a predefined event occurs;
  - identifying two events between which the monitor job should occur;
  - identifying a position in a buffer in which to place the monitor job in response to the predefined event occurring, wherein placing the monitor job in the identified position will cause the monitor job to be executed at a correct time; and
  - placing the monitor job in the identified position in the buffer.
2. (Original) The method of claim 1 wherein the buffer includes a plurality of production jobs, and wherein the method further comprises:
  - determining whether at least some of the plurality of production jobs need to be rearranged in order to place the monitor job into the identified position; and
  - rearranging at least some of the plurality of production jobs.
3. (Original) The method of claim 1 further comprising receiving a plurality of production jobs while monitoring the status of the tool.
4. (Original) The method of claim 1 wherein the position of the monitor job is based on a number of jobs that the tool can process prior to an occurrence of a maintenance event.
5. (Original) The method of claim 1 wherein the position of the monitor job is based on a number of jobs processed by the tool since an occurrence of a prior maintenance event.
6. (Original) The method of claim 1 wherein monitoring a status of the tool to determine when an event occurs comprises waiting for an event notification message.
7. Canceled.

8. (Original) A method for optimizing a number of jobs processed by a manufacturing tool having a plurality of processing portions, wherein each portion is associated with a threshold value, a new job count representing a request that has been received but not yet accepted to process a job using the portion, and a summation value that includes the new job count and a number of jobs designated for processing by that portion, the method comprising:

identifying which of the portions are required for processing a job upon receiving a processing request for the job;

updating the new job count for each portion that is required;

comparing the threshold value for each portion with the summation value; and

accepting the job for processing only if the summation value meets the threshold value.

9. (Original) The method of claim 8 further comprising scheduling the manufacturing tool for maintenance if the summation value for each portion fails to meet the threshold value for that portion.

10. (Original) The method of claim 8 further comprising scheduling a portion of the manufacturing tool for maintenance if the summation value for the portion fails to meet the threshold value for that portion.

11. (Original) The method of claim 8 wherein identifying which of the portions are required for processing a job is based on a recipe associated with the job.

12. (Original) The method of claim 8 further comprising calculating the number of jobs designated for processing by that portion, wherein the number of jobs is calculated using a processing batch life count representing a job currently being processed, and a waiting batch life count representing a job that is waiting for processing after being accepted for processing.

13. (Original) The method of claim 12 wherein calculating the number of jobs further uses a batch life level count representing a number of jobs that have passed through the portion and that have completed their processing through all portions.

14. (Original) The method of claim 13 further comprising calculating the batch life level count by subtracting a history life count representing a number of jobs that have been processed by the portion and are still undergoing processing by the manufacturing tool from a life count representing a number of jobs that have entered the portion.

15. (Currently Amended) A system for scheduling at least one job for a manufacturing tool in a semiconductor manufacturing environment, the system comprising:

the manufacturing tool;

a scheduler including a scheduling process, a job buffer, and one or more triggering events; and a plurality of instructions including:

instructions for monitoring a status of the tool to determine when a triggering event occurs;

instructions for identifying a position in the job buffer in which to place the job in response to the trigger event, wherein placing the job in the identified position will cause the job to be executed at a correct time; and

instructions for placing the job in the identified position in the job buffer;

wherein the manufacturing tool comprises a plurality of processing portions, and wherein each portion is associated with a threshold value, a new job count representing a request that has been received but not yet accepted to process a job using the portion, and a summation value that includes the new job count and a number of jobs designated for processing by that portion.

16. (Original) The system of claim 15 wherein the job is a monitor job and wherein the job buffer includes a plurality of production jobs, wherein the system further comprises:

instructions for determining whether at least some of the plurality of production jobs need to be rearranged in order to place the monitor job into the identified position; and

instructions for rearranging at least some of the plurality of production jobs.

17. (Original) The system of claim 15 further comprising a manufacturing execution system adapted for interacting with at least one of the manufacturing tool and the scheduler.

18. Canceled.

19. (Currently Amended) The system of claim [[18]] 19 further comprising:  
instructions for identifying which of the portions are required for processing a job upon receiving a processing request for the job;

instructions for updating the new job count for each portion that is required;  
instructions for comparing the threshold value for each portion with the summation value; and  
instructions for accepting the job for processing only if the summation value meets the threshold value.

20. (Original) The system of claim 19 further comprising instructions for scheduling the manufacturing tool for maintenance if the summation value for each portion fails to meet the threshold value for that portion.

21. (Original) The system of claim 19 further comprising instructions for scheduling a portion of the manufacturing tool for maintenance if the summation value for the portion fails to meet the threshold value for that portion.

22. (Original) The system of claim 19 further comprising instructions for calculating the number of jobs designated for processing by that portion, wherein the number of jobs is calculated using a processing batch life count representing a job currently being processed, and a waiting batch life count representing a job that is waiting for processing after being accepted for processing.

23. (Original) The system of claim 22 wherein the instructions for calculating the number of jobs further include instructions for using a batch life level count representing a number of jobs that have passed through the portion and that have completed their processing through all portions.

24. (Original) The system of claim 23 further comprising instructions for calculating the batch life level count by subtracting a history life count representing a number of jobs that have been processed by the portion and are still undergoing processing by the manufacturing tool from a life count representing a number of jobs that have entered the portion.